

# Instructional Materials Analysis and Selection

**Phase 3:** Assessing Content Alignment to the  
Common Core State Standards for Mathematics

**Grade 3**



a project of  
**The Charles A. Dana Center**  
at the University of Texas at Austin

# **Instructional Materials Analysis and Selection**

***Phase 3:***

***Assessing Content Alignment to the Common Core State Standards for Mathematics***

***A project of***

**The Indiana Education Roundtable, The Indiana Department of Education,  
*and***

**The Charles A. Dana Center at The University of Texas at Austin**

**2010–2011**

## Instructional Materials Analysis and Selection

### ***Assessing Content Alignment to the Common Core State Standards for Mathematics***

---

This tool provides educators with a structured way to make informed decisions when selecting mathematics instructional materials. In particular, it can help you become more knowledgeable about the *Common Core State Standards for Mathematics* so you can select instructional materials aligned with these standards.

This resource can also be used with the Dana Center's larger 4-phase *Instructional Materials Analysis and Selection* toolset: Phase 1: *Studying the Standards*, Phase 2: *Narrowing the Field of Instructional Materials*, Phase 3: *Assessing Subject-Area Content Alignment*, and Phase 4: *Assessing Vertical Alignment of Instructional Materials*. The particular resource you hold is a phase 3 tool that has been customized for assessing the alignment of instructional materials with the *Common Core State Standards for Mathematics*. Note that in 2009, the Dana Center developed a similar tool for Indiana educators to use in analyzing the alignment of instructional materials to Indiana's *Academic Standards for Mathematics*.

### **Copyright 2011, 2010, the Charles A. Dana Center at The University of Texas at Austin**

---

Unless otherwise indicated, the materials found in this resource are the copyrighted property of the Charles A. Dana Center at The University of Texas at Austin (the University). No part of this resource shall be reproduced, stored in a retrieval system, or transmitted by any means—electronically, mechanically, or via photocopying, recording, or otherwise, including via methods yet to be invented—without express written permission from the University, except under the following conditions. The following excludes materials not exclusively owned by the Charles A. Dana Center at the University of Texas at Austin.

- 1) *The Indiana Department of Education, as well as Indiana school districts*, can, through June 30, 2011, copy and disseminate this resource to schools and districts within the state of Indiana, without obtaining further permission from the University, so long as the original copyright notice is retained.
- 2) *Other organizations or individuals* must obtain prior written permission from the University for the use of these materials, the terms of which may be set forth in a copyright license agreement, and which may include the payment of a licensing fee, or royalties, or both.

We use all funds generated through use of our materials to further our nonprofit educational mission. Please send permission requests or questions to us here:

Charles A. Dana Center	Fax: 512-232-1855
The University of Texas at Austin	dana-txshop@utlists.utexas.edu
1616 Guadalupe Street, Suite 3.206	www.utdanacenter.org
Austin, TX 78701-1222	

The Dana Center and The University, as well as the authors and editors, assume no liability for any loss or damage resulting from the use of this resource. Any opinions, findings, conclusions, or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of The University of Texas at Austin. We have made extensive efforts to ensure the accuracy of the information in this resource, to provide proper acknowledgement of original sources, and to otherwise comply with copyright law. If you find an error or you believe we have failed to provide proper acknowledgment, please contact us at [dana-txshop@utlists.utexas.edu](mailto:dana-txshop@utlists.utexas.edu).

**The copyright of the *Common Core State Standards for Mathematics* is held by the National Governors Association Center for Best Practices and the Council of Chief State School Officers.** The use of the CCSS for Mathematics in this Instructional Materials Analysis tool is done under the CCSS Terms of Use, available at [www.corestandards.org/terms-of-use](http://www.corestandards.org/terms-of-use). For more detail, see *About the development of this resource*.

Per the Terms of Use, we include this notice, which applies to the Common Core State Standards in this document: © Copyright 2010. National Governors Association Center for Best Practices and Council of Chief State School Officers. All rights reserved.

## About the development of this resource

This tool, *Instructional Materials Analysis and Selection: Assessing Content Alignment to the Common Core State Standards for Mathematics*, draws on the Dana Center’s nearly 20 years of experience in strengthening education and has been used extensively in Texas and, increasingly, other states, to help local school districts and schools select instructional materials aligned with their standards. Development and production of the Instructional Materials Analysis toolset was supported by the Charles A. Dana Center.

This resource consists of a set of 15 individual grade-level / course documents that span kindergarten through the third year of high school mathematics. There is a document for each grade from kindergarten through 8, and six documents for high school mathematics (one each for the three courses in the traditional high school pathway Algebra I, Geometry, Algebra II; and one each for the three courses in the integrated high school pathway Mathematics I, Mathematics II, and Mathematics III).<sup>\*</sup> At the request of various states and other entities, the Dana Center has populated this *Instructional Materials Analysis and Selection* tool with standards from the *Common Core State Standards for Mathematics* for use by local districts in selecting instructional materials aligned with these standards.

Note that the copyright of the *Common Core State Standards for Mathematics* is held by the National Governors Association Center for Best Practices and the Council of Chief State School Officers (collectively, NGA Center/CCSSO). This use of the CCSS for Mathematics is done under the CCSS Terms of Use, available at [www.corestandards.org/terms-of-use](http://www.corestandards.org/terms-of-use). Specifically, this work is done under the Terms of Use “non-exclusive, royalty-free license to copy, publish, distribute, and display the Common Core State Standards for non-commercial purposes that support the Common Core State Standards Initiative.” For a complete copy of the *Common Core State Standards for Mathematics* as well as the *CCSS for Mathematics, Appendix A: Designing high school mathematics courses based on the Common Core State Standards*, go to [www.corestandards.org/the-standards](http://www.corestandards.org/the-standards).

October 2010 release.

We welcome your comments and suggestions for improvements—please send to [dana-txshop@utlists.utexas.edu](mailto:dana-txshop@utlists.utexas.edu) or the address in the copyright section above.

## About the Charles A. Dana Center at The University of Texas at Austin

The Dana Center works to raise student achievement in K–16 mathematics and science, especially for historically underserved populations. We do so by providing direct service to school districts and institutions of higher education; to local, state, and national education leaders; and to agencies, nonprofits, and professional organizations concerned with strengthening American education.

The Center was founded in 1991 at The University of Texas at Austin. We carry out our work by supporting high standards and building system capacity; collaborating with key state and national organizations to address emerging issues; creating and delivering professional supports for educators and education leaders; and writing and publishing education resources, including student supports. Our staff of more than 60 has worked with dozens of school systems in nearly 20 states and with 90 percent of Texas’s more than 1,000 school districts. We are committed to ensuring that the accident of where a child attends school does not limit the academic opportunities he or she can pursue.

For more information about our programs and resources, see our homepage at [www.utdanacenter.org](http://www.utdanacenter.org). To access our resources (many of them free), see our products index at [www.utdanacenter.org/products](http://www.utdanacenter.org/products). And to learn more about our professional development—and sign up online—go to [www.utdanacenter.org/pd](http://www.utdanacenter.org/pd).

---

<sup>\*</sup> For the high school course sequences, we relied on the *Common Core State Standards Mathematics Appendix A: Designing High School Mathematics Courses Based on the Common Core State Standards*, developed for the CCSS initiative by Achieve, Inc., which convened and managed the Achieve Pathways Group.

## Acknowledgments

---

Unless otherwise noted, all staff listed here are affiliated with the Dana Center.

### Project director

Laurie Garland, director of program and product development  
Sam Zigrossi, senior advisor

### Developers and facilitators

Patti Bridwell, senior program coordinator for leadership  
Laurie Garland, director of program and product development  
Tom McVey, professional development team lead  
Sam Zigrossi, senior advisor

### Our thanks

We gratefully acknowledge the more than 100 school districts and thousands of educators who have informed the development of these resources.

### Editorial and production staff

Cara Hopkins, proofreader  
Rachel Jenkins, consulting editor  
Tom McVey, professional development team lead  
and print production manager  
Phil Swann, senior designer

## Table of contents

---

Introduction.....	1
Scoring Rubric and Documentation Forms.....	3
Documenting Alignment to the CCSS for Mathematics: Standards for Mathematical Practice .....	6
Documenting Alignment to the CCSS for Mathematics: Standards for Mathematical Content .....	14

## Introduction

**Phase 1:**        **Studying the Standards**

**Phase 2:**        **Narrowing the Field of Instructional Materials**

**Phase 3:**        **Assessing Mathematical Content Alignment**

The purpose of Phase 3: Assessing Mathematical Content Alignment is to determine the degree to which the materials are aligned to the standards (content and processes). In Phase 3, participants conduct an in-depth review of the 2-3 instructional materials selected in Phase 2. The Phase 3 process requires selection committee members to use set criteria in order to determine a rating for each sample, to cite examples to justify their score for each sample, and to document standards that are missing or not well-developed in the instructional materials examined.

### *Implementation*

As a whole group, selection committee members should practice applying the Phase 3 rubric. The purpose of the whole group practice is to promote inter-rater reliability and calibration.

In Phase 3 it is not important to analyze every page, section, or chapter of a resource. It is important to identify an area, topic, or big idea for the deep content analysis of Phase 3 (e.g. development of equivalent fractions, addition of whole numbers, development of proportionality...). The identified area, topic, or big idea will be used for all the instructional materials considered in Phase 3. The area, topic, or big idea can be identified through the use of student achievement data, curriculum priorities/challenges, or ideas that typically make up a greater portion of instruction in particular grade levels/courses. In most cases, Phase 3 will identify the one resource that is best aligned.

### *Step-by-Step Instructions*

1. Use your current adoption to practice using the Phase 3 rubric. Select one big idea to focus your analysis (see note above for selecting the area, topic, or big idea).
2. Independently, committee members use their current resource, the identified big idea (and associated pages in that resource), and the Phase 3 rubric to score and document the extent to which the material (content and processes) aligns to the standards.
3. In small groups, committee members share their scoring and justifications. Small groups come to consensus on how the current resource would score on this big idea.
4. Each small group shares with the large group their score. Repeat the consensus building to generate a large group score on this big idea.
5. Clarify any misunderstandings about how to apply the rubric before committee members begin to use Phase 3 rubric on the selected materials.

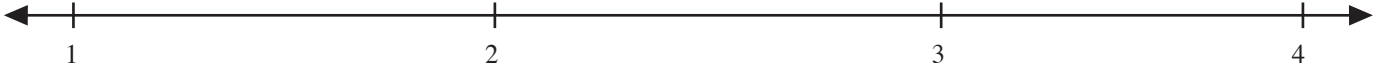
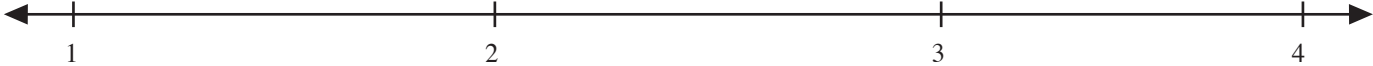
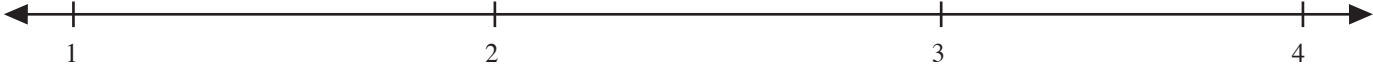
6. Based on the size of the selection committee, determine the number of areas, topics, or big ideas to be examined for each grade/course. If the group size is large, more areas, topics, big ideas can be examined within each grade level/course.
7. Make sure committee members have multiple copies of the Phase 3 rubric.
8. Committee members apply the Phase 3 rubric for each of the materials.
9. Establish a time line for groups to complete and submit Phase 3 documentation.
10. Establish a data collection and analysis process to attain a rating for each resource.

*Materials and Supplies*

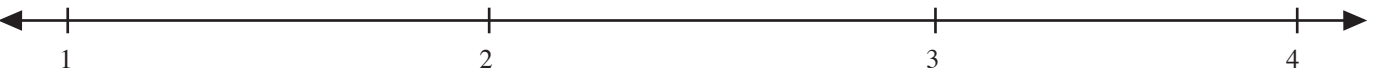

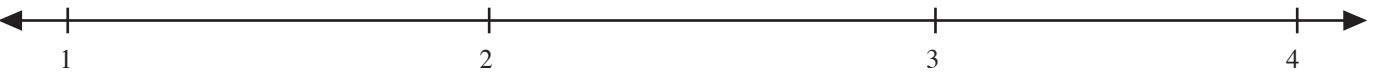
- Phase 3: Assessing Mathematical Content Alignment black line master — multiple copies per person
- Currently used instructional resource
- The 2 to 4 instructional materials selected in Phase 2

**Phase 4: Assessing Vertical Alignment of Instructional Materials**

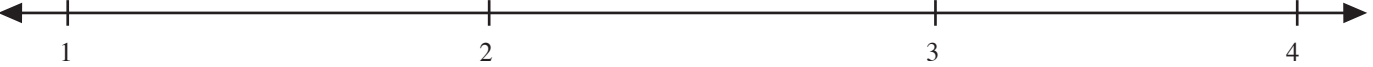
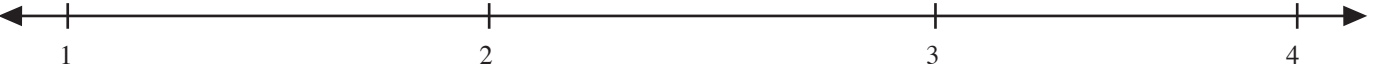
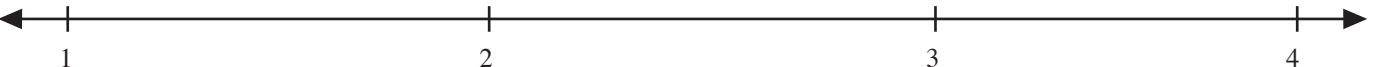
# **Important Mathematical Ideas: Understanding the scoring**

	Superficially Developed	Well Developed
Development	 <p>Important mathematical ideas are alluded to simply or are missing, approached primarily from a skill level, or provided for students outside any context.</p>	<p>Important mathematical ideas are evident, conceptually developed, and emerge within the context of real-world examples, interesting problems, application situations, or student investigations.</p>
Connections	 <p>Important mathematical ideas are developed independently of each other (i.e., they are discrete, independent ideas).</p>	<p>Important mathematical ideas are developed by expanding and connecting to other important mathematical ideas in such a way as to build understanding of mathematics as a unified whole.</p>
Rigor and Depth	 <p>Important mathematical ideas are applied in routine problems or in using formulated procedures, and are extended in separate / optional problems.</p>	<p>Important mathematical ideas are applied and extended in novel situations or embedded in the content, requiring the extension of important mathematical ideas and the use of multiple approaches.</p>

# Skills and Procedures: Understanding the scoring

	Superficially Developed	Well Developed
Development	 <p>Skills and procedures are the primary focus, are developed without conceptual understanding, and are loosely connected to important mathematical ideas — important mathematical ideas are adjunct.</p>	<p>Skills and procedures are integrated with important mathematical ideas and are presented as important tools in applying and understanding important mathematical ideas.</p>
Connections	 <p>Skills and procedures are treated as discrete skills rarely connected to important mathematical ideas or other skills and procedures.</p>	<p>Skills and procedures are integrated with—and consistently connected to—important mathematical ideas and other skills and procedures.</p>
Rigor and Depth	 <p>Skills and procedures are practiced without conceptual understanding outside any context, do not require the use of important mathematical ideas, and are primarily practiced in rote exercises and drill.</p>	<p>Skills and procedures are critical to the application and understanding of important mathematical ideas, and are embedded in problem situations.</p>

## Mathematical Relationships: Understanding the scoring

	Superficially Developed	Well Developed
Development	 <p>Mathematical relationships are not evident, and mathematics appears as a series of discrete skills and ideas.</p>	<p>Mathematical relationships are evident in such a way as to build understanding of mathematics as a unified whole.</p>
Connections	 <p>Mathematical relationships are not required of students or are used primarily to provide a context for the practice of skills or procedures — words wrapped around drill.</p>	<p>Mathematical relationships are integrated with important mathematical ideas, and are integral in required activities, problems, and applications.</p>
Rigor and Depth	 <p>Mathematical relationships require the use of skills and procedures, but rarely require the use of any important mathematical ideas or connections outside mathematics.</p>	<p>Mathematical relationships require the broad use of mathematics and integrate the need for important mathematical ideas, skills, and procedures, as well as connections outside mathematics.</p>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

## Documenting Alignment to the Standards for Mathematical Practice

### 1. Make sense of problems and persevere in solving them.

Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating



Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

## Documenting Alignment to the Standards for Mathematical Practice

### 2. Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating



Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

## Documenting Alignment to the Standards for Mathematical Practice

### 3. Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating



Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

## Documenting Alignment to the Standards for Mathematical Practice

### 4. Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating



Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

## Documenting Alignment to the Standards for Mathematical Practice

### 5. Use appropriate tools strategically.

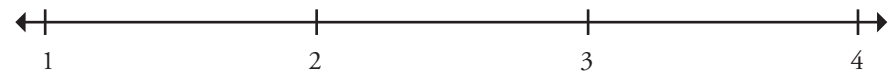
Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating



Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

## Documenting Alignment to the Standards for Mathematical Practice

### 6. Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating



Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

## Documenting Alignment to the Standards for Mathematical Practice

### 7. Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see  $7 \times 8$  equals the well remembered  $7 \times 5 + 7 \times 3$ , in preparation for learning about the distributive property. In the expression  $x^2 + 9x + 14$ , older students can see the 14 as  $2 \times 7$  and the 9 as  $2 + 7$ . They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see  $5 - 3(x - y)^2$  as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers  $x$  and  $y$ .

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating



Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

## Documenting Alignment to the Standards for Mathematical Practice

### 8. Look for and express regularity in repeated reasoning.

Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation  $(y - 2)/(x - 1) = 3$ . Noticing the regularity in the way terms cancel when expanding  $(x - 1)(x + 1)$ ,  $(x - 1)(x^2 + x + 1)$ , and  $(x - 1)(x^3 + x^2 + x + 1)$  might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.

Indicate the chapter(s), section(s), or page(s) reviewed.

Portions of the mathematical practice that are missing or not well developed in the instructional materials (if any):

Summary/Justification/Evidence

Overall Rating





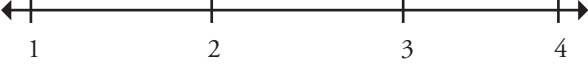

Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

**MATHEMATICS: GRADE 3 – OPERATIONS AND ALGEBRAIC THINKING – 3.OA**



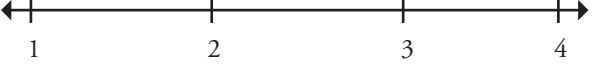

Represent and solve problems involving addition and subtraction.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.OA.3</b></p> <p>Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.<sup>1</sup></p> <p><sup>1</sup> See Glossary, Table 2.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> <p>Overall Rating </p>

Title of Instructional Materials: \_\_\_\_\_

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

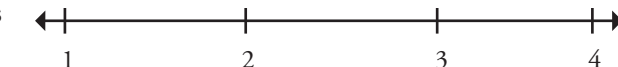
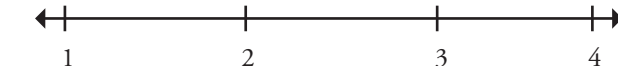


**MATHEMATICS: GRADE 3 – OPERATIONS AND ALGEBRAIC THINKING – 3.OA**

<p><b>Understand properties of multiplication and the relationship between multiplication and division.</b></p>	<p><b>Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.</b></p>
<p><b>3.OA.5</b></p> <p>Apply properties of operations as strategies to multiply and divide.<sup>1</sup>  <i>Examples: If <math>6 \times 4 = 24</math> is known, then <math>4 \times 6 = 24</math> is also known. (Commutative property of multiplication.) <math>3 \times 5 \times 2</math> can be found by <math>3 \times 5 = 15</math>, then <math>15 \times 2 = 30</math>, or by <math>5 \times 2 = 10</math>, then <math>3 \times 10 = 30</math>. (Associative property of multiplication.) Knowing that <math>8 \times 5 = 40</math> and <math>8 \times 2 = 16</math>, one can find <math>8 \times 7</math> as <math>8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56</math>. (Distributive property.)</i></p> <p><sup>1</sup> Students need not use formal terms for these properties.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<div data-bbox="1035 410 1990 487"> <p>Important Mathematical Ideas </p> </div> <div data-bbox="1035 573 1990 649"> <p>Skills and Procedures </p> </div> <div data-bbox="1035 735 1990 812"> <p>Mathematical Relationships </p> </div> <div data-bbox="1035 889 1476 922"> <p><b>Summary / Justification / Evidence</b></p> </div> <div data-bbox="1035 1055 1990 1279"> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> </div> <div data-bbox="1035 1287 1990 1377"> <p>Overall Rating </p> </div>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



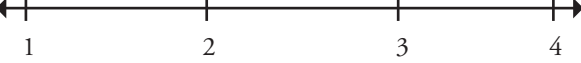

## MATHEMATICS: GRADE 3 – OPERATIONS AND ALGEBRAIC THINKING – 3.OA

<b>Understand properties of multiplication and the relationship between multiplication and division.</b>	<b>Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.</b>
<b>3.OA.6</b> Understand division as an unknown-factor problem. <i>For example, find <math>32 \div 8</math> by finding the number that makes 32 when multiplied by 8.</i>	<div>Important Mathematical Ideas </div> <div>Skills and Procedures </div> <div>Mathematical Relationships </div> <div>Summary / Justification / Evidence</div>
Indicate the chapter(s), section(s), and/or page(s) reviewed.	Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):
	Overall Rating 

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



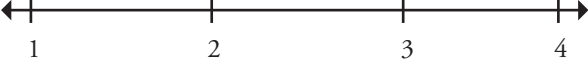

## MATHEMATICS: GRADE 3 – OPERATIONS AND ALGEBRAIC THINKING – 3.OA

<b>Multiply and divide within 100.</b>	<b>Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.</b>
<b>3.OA.7</b> Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	<div>Important Mathematical Ideas </div> <div>Skills and Procedures </div> <div>Mathematical Relationships </div> <div>Summary / Justification / Evidence</div>
Indicate the chapter(s), section(s), and/or page(s) reviewed.	Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):
	Overall Rating 

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

**MATHEMATICS: GRADE 3 – OPERATIONS AND ALGEBRAIC THINKING – 3.OA**

Solve problems involving the four operations, and identify and explain patterns in arithmetic.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.OA.8</b></p> <p>Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.<sup>1</sup></p> <p><small>1 This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations).</small></p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<div data-bbox="1033 407 1999 488"> <p>Important Mathematical Ideas </p> </div> <div data-bbox="1033 570 1999 651"> <p>Skills and Procedures </p> </div> <div data-bbox="1033 732 1999 813"> <p>Mathematical Relationships </p> </div> <div data-bbox="1033 886 1999 1049"> <p><b>Summary / Justification / Evidence</b></p> </div> <div data-bbox="1033 1057 1999 1284"> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> </div> <div data-bbox="1033 1292 1999 1373"> <p>Overall Rating </p> </div>

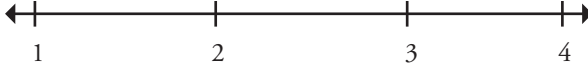



Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



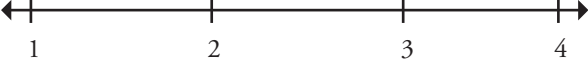

**MATHEMATICS: GRADE 3 – NUMBER AND OPERATIONS IN BASE TEN – 3.NBT**

<p><b>Use place value understanding and properties of operations to perform multi-digit arithmetic.</b></p>	<p><b>Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.</b></p>
<p><b>3.NBT.2</b></p> <p>Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.<sup>1</sup></p> <p><sup>1</sup> A range of algorithms may be used.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p>
	<p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> <p><b>Overall Rating</b> </p>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



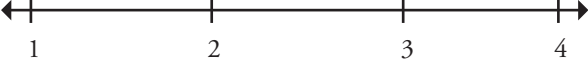

**MATHEMATICS: GRADE 3 – NUMBER AND OPERATIONS IN BASE TEN – 3.NBT**

Use place value understanding and properties of operations to perform multi-digit arithmetic.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.NBT.3</b></p> <p>Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., <math>9 \times 80</math>, <math>5 \times 60</math>) using strategies based on place value and properties of operations.<sup>1</sup></p> <p><sup>1</sup> A range of algorithms may be used.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p>
	<p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p>
	<p>Overall Rating </p>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



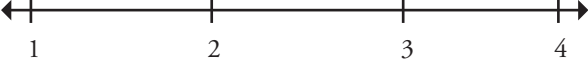

**MATHEMATICS: GRADE 3 – NUMBER AND OPERATIONS – FRACTIONS – 3.NF**

Develop understanding of fractions as numbers.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.NF.1</b></p> <p>Understand a fraction <math>\frac{1}{b}</math> as the quantity formed by 1 part when a whole is partitioned into <math>b</math> equal parts; understand a fraction <math>\frac{a}{b}</math> as the quantity formed by <math>a</math> parts of size <math>\frac{1}{b}</math>.<sup>1</sup></p> <p>1 Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> <p>Overall Rating </p>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



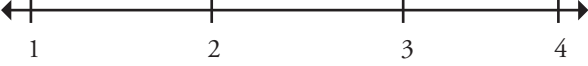

**MATHEMATICS: GRADE 3 – NUMBER AND OPERATIONS – FRACTIONS – 3.NF**

Develop understanding of fractions as numbers.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.NF.2a</b></p> <p>2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p>a. Represent a fraction <math>\frac{1}{b}</math> on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into <math>b</math> equal parts. Recognize that each part has size <math>\frac{1}{b}</math> and that the endpoint of the part based at 0 locates the number <math>\frac{1}{b}</math> on the number line.<sup>1</sup></p> <p>1 Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> <p>Overall Rating </p>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



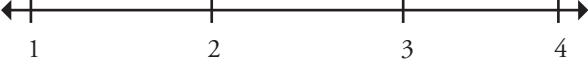

**MATHEMATICS: GRADE 3 – NUMBER AND OPERATIONS – FRACTIONS – 3.NF**

Develop understanding of fractions as numbers.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.NF.2b</b></p> <p>2. Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p> <p>b. Represent a fraction <math>a/b</math> on a number line diagram by marking off <math>a</math> lengths <math>1/b</math> from 0. Recognize that the resulting interval has size <math>a/b</math> and that its endpoint locates the number <math>a/b</math> on the number line.<sup>1</sup></p> <p><sup>1</sup> Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> <p>Overall Rating </p>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



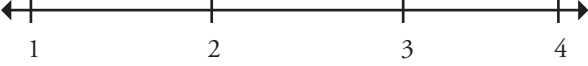

**MATHEMATICS: GRADE 3 – NUMBER AND OPERATIONS – FRACTIONS – 3.NF**

Develop understanding of fractions as numbers.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.NF.3a</b></p> <p>3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.<sup>1</sup></p> <p><sup>1</sup> Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> <p>Overall Rating </p>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



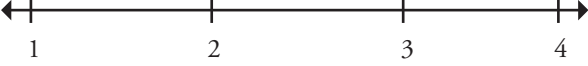

**MATHEMATICS: GRADE 3 – NUMBER AND OPERATIONS – FRACTIONS – 3.NF**

Develop understanding of fractions as numbers.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.NF.3b</b></p> <p>3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>b. Recognize and generate simple equivalent fractions, e.g., <math>\frac{1}{2} = \frac{2}{4}</math>, <math>\frac{4}{6} = \frac{2}{3}</math>. Explain why the fractions are equivalent, e.g., by using a visual fraction model.<sup>1</sup></p> <p><sup>1</sup> Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> <p>Overall Rating </p>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_



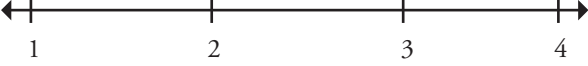

**MATHEMATICS: GRADE 3 – NUMBER AND OPERATIONS – FRACTIONS – 3.NF**

Develop understanding of fractions as numbers.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.NF.3c</b></p> <p>3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. <i>Examples: Express 3 in the form <math>3 = \frac{3}{1}</math>; recognize that <math>\frac{6}{1} = 6</math>; locate <math>\frac{4}{4}</math> and 1 at the same point of a number line diagram.<sup>1</sup></i></p> <p><sup>1</sup> Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> <p>Overall Rating </p>

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

**MATHEMATICS: GRADE 3 – NUMBER AND OPERATIONS – FRACTIONS – 3.NF**


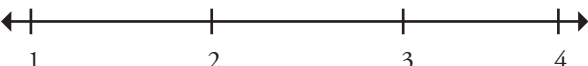
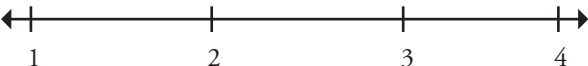
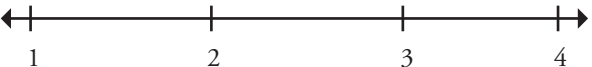
Develop understanding of fractions as numbers.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.NF.3d</b></p> <p>3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.</p> <p>d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, or <math>&lt;</math>, and justify the conclusions, e.g., by using a visual fraction model.<sup>1</sup></p> <p><sup>1</sup> Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.</p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> <p>Overall Rating </p>

Title of Instructional Materials: \_\_\_\_\_

Reviewed By: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

**MATHEMATICS: GRADE 3 – MEASUREMENT AND DATA – 3.MD**

Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.MD.2</b></p> <p>Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).<sup>1</sup> Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.<sup>2</sup></p> <p><small>1 Excludes compound units such as cm<sup>3</sup> and finding the geometric volume of a container. 2 Excludes multiplicative comparison problems (problems involving notions of “times as much”; see Glossary, Table 2).</small></p> <p><b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b></p>	<div data-bbox="1033 407 1999 488"> <p>Important Mathematical Ideas </p> </div> <div data-bbox="1033 565 1999 646"> <p>Skills and Procedures </p> </div> <div data-bbox="1033 722 1999 803"> <p>Mathematical Relationships </p> </div> <div data-bbox="1033 880 1999 1047"> <p><b>Summary / Justification / Evidence</b></p> </div> <div data-bbox="1033 1052 1999 1279"> <p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p> </div> <div data-bbox="1033 1284 1999 1365"> <p>Overall Rating </p> </div>

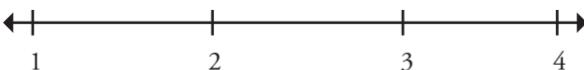
Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

<b>Geometric measurement: understand concepts of area and relate area to multiplication and to addition.</b>	<b>Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.</b>
<b>3.MD.6</b> Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	<div>Important Mathematical Ideas </div> <div>Skills and Procedures </div> <div>Mathematical Relationships </div> <div>Summary / Justification / Evidence</div>
Indicate the chapter(s), section(s), and/or page(s) reviewed.	Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):
	Overall Rating 

Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

<b>Geometric measurement: understand concepts of area and relate area to multiplication and to addition.</b>	<b>Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.</b>
<b>3.MD.7c</b>	Important Mathematical Ideas 
7. Relate area to the operations of multiplication and addition.	Skills and Procedures 
c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths $a$ and $b + c$ is the sum of $a \times b$ and $a \times c$ . Use area models to represent the distributive property in mathematical reasoning.	Mathematical Relationships 
	<b>Summary / Justification / Evidence</b>
Indicate the chapter(s), section(s), and/or page(s) reviewed.	<b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b>
	Overall Rating 

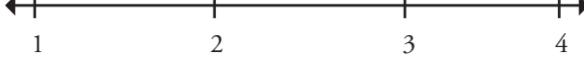
Title of Instructional Materials: \_\_\_\_\_

<b>Geometric measurement: understand concepts of area and relate area to multiplication and to addition.</b>	<b>Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.</b>
<b>3.MD.7d</b>	Important Mathematical Ideas ← ————— ————— ————— → 1                      2                      3                      4
7. Relate area to the operations of multiplication and addition.	Skills and Procedures ← ————— ————— ————— → 1                      2                      3                      4
d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	Mathematical Relationships ← ————— ————— ————— → 1                      2                      3                      4
	<b>Summary / Justification / Evidence</b>
<b>Indicate the chapter(s), section(s), and/or page(s) reviewed.</b>	<b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b>
	Overall Rating ← ————— ————— ————— → 1                      2                      3                      4

Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

Title of Instructional Materials: \_\_\_\_\_

Reason with shapes and their attributes.	Summary and documentation of how the domain, cluster, and standard are met. Cite examples from the materials.
<p><b>3.G.2</b></p> <p>Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. <i>For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.</i></p>	<p>Important Mathematical Ideas </p> <p>Skills and Procedures </p> <p>Mathematical Relationships </p> <p><b>Summary / Justification / Evidence</b></p>
<p>Indicate the chapter(s), section(s), and/or page(s) reviewed.</p>	<p><b>Portions of the domain, cluster, and standard that are missing or not well developed in the instructional materials (if any):</b></p>
	<p>Overall Rating </p>